

30 October 2020

Via E-filing

Ms. Marija Tresoglavic  
Acting Commission Secretary  
BC Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Ms. Tresoglavic:

**Re: British Columbia Utilities Commission (BCUC, Commission)  
Creative Energy Vancouver Platforms Inc. (Creative Energy)  
Extension to South Downtown Heating Thermal Energy System (TES)  
Consolidated Information Filing**

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Further to the Commission's Decision and the process established under Order G-267-20, Creative Energy writes to provide the following consolidated information to support the review and approval of a Certificate of Public Convenience and Necessity (**CPCN**) for the extension of the South Downtown Heating TES to serve a new building under development at 889 Pacific Street, Vancouver (**Extension**).

## 1 Introduction

Pursuant to the Order G-267-20 Decision, the Commission determined that Creative Energy requires a CPCN to construct and operate the proposed Extension of the South Downtown Heating TES. The Commission determined that section 2.4.5 of the TES Guidelines is inapplicable because the instructions therein have not been incorporated into a class exemption for Stream B TES (nor into an exemption specific to the South Downtown Heating TES). Therefore, sections 45 and 46 of the *Utilities Commission Act (UCA)* apply, unaltered, and pursuant to section 45(1) of the *UCA* a CPCN is required.

We therefore understand the situation is as follows:

- The Stream B TES – System Extension Form we attested to and submitted to the Commission for approval is redundant given that section 2.4.5 of the TES Guidelines is inapplicable;

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- The ratio of TES extension capital cost to initial TES capital cost is inapplicable given that under section 2.4.5 of the TES Guidelines the ratio was only relevant to the question of whether a CPCN is required. Section 2.4.5 is inapplicable and a CPCN is required; and
- The 10 percent rate impact criterion is also inapplicable for the same reasons – section 2.4.5 is inapplicable and a CPCN is required.

We understand that the focus of this proceeding going forward is therefore whether the Commission should grant a certificate that public convenience and necessity require the construction and operation of the proposed extension in accordance with the statutory criteria prescribed in section 46(3.1) of the *UCA* and also the guidance provided by the Commission’s CPCN Application Guidelines.

Section 46(3.1) of the *UCA* provides as follows:

- (3.1) In deciding whether to issue a certificate under subsection (3) applied for by a public utility other than the authority, the commission must consider
- (a) the applicable of British Columbia's energy objectives,
  - (b) the most recent long-term resource plan filed by the public utility under section 44.1, if any, and
  - (c) the extent to which the application for the certificate is consistent with the applicable requirements under sections 6 and 19 of the [Clean Energy Act](#).

With respect to paragraphs (b) and (c), above, we confirm that there is no long-term resource plan in relation to the South Downtown Heating TES, and also that there are no applicable requirements under sections 6 and 19 of the *Clean Energy Act*.

In deciding whether to issue a CPCN for the proposed extension, the BCUC therefore must consider the applicable of British Columbia’s energy objectives, and may consider the information contemplated by the CPCN Application Guidelines while also considering that the CPCN Application Guidelines are intended to provide the flexibility for a CPCN application to reflect the specific circumstances of the applicant, the size and nature of the project, and the issues raised by the application.<sup>1</sup>

The evidence supporting the request for a CPCN for the proposed Extension is in view of the fact that the proposed Extension consists of approximately 140 meters of distribution piping (105 meters underground and 35 meters within the new customer’s building) and an energy transfer station within the below ground parkade of the customer’s building, to connect the existing South Downtown TES (which has a CPCN) to one specific new customer as requested by the new customer. Additionally, Creative Energy considers that it has the obligation to serve this new customer.

The evidence in relation to the applicable BC Energy Objectives, CPCN Application Guidelines and TES Regulatory Framework Guidelines is summarized in the following sections.

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<sup>1</sup> CPCN Application Guidelines, p. 1.

## 2 Applicable BC Energy Objectives

Creative Energy notes that the proposed Extension is to the existing South Downtown TES. In granting the CPCN for the South Downtown TES under Order C-1-19, and in reference to the specific energy objectives listed in the table below, the Panel found that the TES is consistent with most of British Columbia’s energy objectives but conflicts with objective (g), which relates to reducing GHG emissions (refer to pages 24-26 of the Order C-1-19 Reasons for Decision). In addition, the Panel did not find that the TES advances objectives (d) or (i), but concluded that neither does the TES conflict with those objectives.

Reference to Provincial Energy Objectives (Section 2 of <i>Clean Energy Act</i> ) in the Order C-1-19 Decision
(d) to use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources
(g) to reduce BC greenhouse gas emissions
(i) to encourage communities to reduce greenhouse gas emissions and use energy efficiently
(k) to encourage economic development and the creation and retention of jobs
(o) to achieve British Columbia’s energy objectives without the use of nuclear power

Creative Energy submits that the same evidence and Panel conclusions necessarily continue to apply. The Extension will support or otherwise not conflict with the applicable energy objectives as reviewed prior. In addition, the Extension will have a beneficial rate impact to existing customers of the system.

## 3 Other Applicable Matters in the CPCN Application Guidelines

### 3.1 Project Need, Alternatives and Justification

The developer of the new building at 889 Pacific Street – Grosvenor Americas (**Grosvenor**) – has determined to heat the building by connecting to Creative Energy’s nearby district energy system, the South Downtown Heating TES. Grosvenor has designed its building to receive heating service from a district energy system located outside the building. As such, while Grosvenor would have reviewed other alternative heating options prior to requesting service from Creative Energy and designing its building accordingly, the building design now renders any hypothetical alternatives for heating not feasible. Creative Energy considers that it has the obligation to serve this new customer that has requested service.

By definition, the Extension to serve the new customer connects to Creative Energy’s existing utility system and therefore there are no feasible alternatives available to Creative Energy to serve the customer other than to connect the customer to the existing and approved TES. The grant of a CPCN for the TES under Order C-1-19, necessarily means that there are no better alternatives for Creative Energy to serve the customer. Further there are no practical alternatives to the Extension project that Creative Energy could have considered other than through the design and equipment for the Extension as described further below.

### 3.2 Consultation

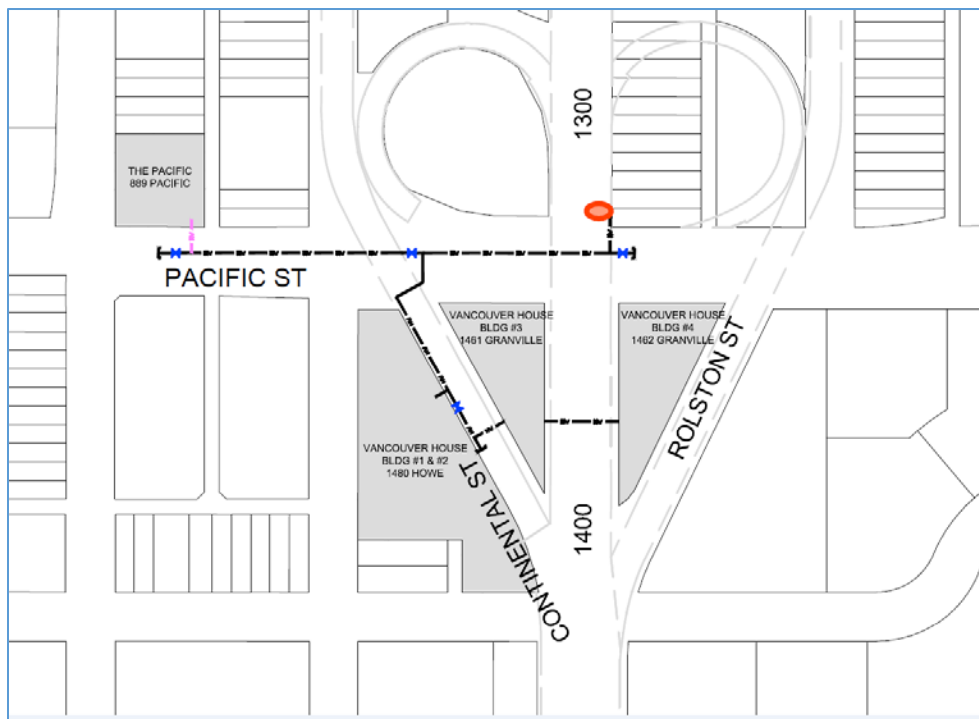
There was no general public consultation in relation to the Extension itself, and none is planned. We continue to engage with the key stakeholder – Grosvenor – as work on the Extension proceeds. Creative Energy obtained required permits and approvals from the City of Vancouver to extend the service on Pacific Street. Traffic was impacted during construction of the distribution piping system (**DPS**) on Pacific Street. To manage public safety and other possible traffic concerns Creative Energy had traffic control persons in place to manage traffic and pedestrians in the area. In addition, to manage any noise concerns from the steel road plates covering the trench, Creative Energy laid rubber padding under the plates and also welded the plates together to dampen noise and vibration.

While the Commission has now determined that a CPCN for the Extension is required, Creative Energy remains of the view that general public consultation, beyond the engagement with Grosvenor and compliance with the City’s requirements, is not required for any other reason. There is no incremental risk of public concern with the underground Extension of the existing system to serve a fifth building nearby.

### 3.3 Project Description

#### 3.3.1 Description

The Extension comprises an Energy Transfer Station (**ETS**) in level P2 at 889 Pacific St, Vancouver, connecting to the South Downtown Heating TES through distribution piping in the 700 and 800 blocks of Pacific Street. The DPS consists of approximately 105 meters of underground piping from existing valves on Pacific Street and approximately 35 meters of piping from the building entry to the ETS. A schematic of the system is depicted below, and further details of the design are provided in Attachment 1.



### 3.3.2 Capacity and Energy

The total of the estimated demand to serve the space heating and domestic hot water load at 889 Pacific Street is 1,591 kW and forecast annual energy consumption equals approximately 2,400 MWh. Please refer to the Design Review Memo prepared by Kerr Wood Leidal at Attachment 2 for further detail on load and the applicable demand and energy use intensities for the building.

Further to the total estimated demand for space heating and domestic hot water, please note the following material amendment and clarification to the information provided in the attestation form that Creative Energy filed to register the Extension. The total of the estimated demand at 889 Pacific Street – 1,591 kW – is the simple sum of the estimated demand for space heating equal to 941kW and the estimated demand for domestic hot water equal to 650kW. The review and analysis supporting the information provided in the attestation form, and as relied upon also in the response to BCUC Staff Information Request (IR) No. 1, reported 1,350 kW as the design capacity and billing determinants for the Extension, which is incorrect. The demand figure of 1,350kW is equal to 1,591kW multiplied by an assumed demand diversity factor of 85 percent.

The total peak design capacity and billing determinants of the system extension is corrected to 941kW. That is, the capacity of the system extension is economically sized to meet the overall demand for space heating only given the diversity of use between space heating and domestic hot water and the required need to serve a system peak for space heating due to weather, independent of hot water demand (which also has storage). This is consistent with the approach to specifying the design capacity and the billing determinants for the TES to serve Buildings 1-4 at the Vancouver House Development, as reviewed during the CPCN Application proceeding for the South Downtown TES and as factored into the interim-approved and proposed final rates to serve those buildings.

The table below has been updated accordingly from the information provided in the response to BCUC Staff IR 1.6 to reflect the peak demand design capacity of the Extension of 941kW. The Extension test and rate impact results in section 3.4 reflect this corrected billing determinant also.

The following table illustrates the capacity of the boiler plant to serve the incremental peak demand of the extension under an 85 percent diversification factor. An assumed diversity factor of 85 percent results in excess capacity being available at the boiler plant, which is considered conservative based on the mix of commercial and residential floor area connected to the South Downtown network. Please also note for context that in an operating hot water district energy system, diversity occurs due to slightly different timing of peak demands between buildings, and variance in the transit time for the increased demand to propagate back to the plant through the piping network and controls system(s).

	<b>Building Peak Design Demand (kW)</b>	<b>Demand at plant based on 85% diversity (kW)</b>
Vancouver House B1	841	715
Vancouver House B2	1,230	1,046
Vancouver House B3	246	209
Vancouver House B4	231	196
889 Pacific	941	800
Total	3,489	2,966
Boiler (System) Capacity	3,336	3,336
Excess Capacity	-153	370

As we reported in the application for a CPCN for the South Downtown TES, it was known at the time that the 899 Pacific Street property was slated for redevelopment and Creative Energy therefore designed the TES with some excess capacity to enable provision of service to an additional building. With conservative assumptions around diversity we expect the current installed capacity of the South Downtown TES boiler plant to be sufficient and not risk service interruption. In the unlikely event that system diversity is less than expected, Creative Energy has a number of options to reduce or manage peak demand. The starting point would be to tune the controls system to spread out the peaks. This can be achieved by adjusting the setbacks at each building so that the ‘warming up’ of the buildings in the mornings occurs at slightly different time, and the domestic hot water tanks temperatures can be lifted on a predictive fashion immediately before the morning demand spike. Equally, the primary hot water temperatures (in the buried piping) can be increased in the hour before peak demand. The temporary boiler plant is designed to accommodate the installation of two additional boilers, but for the reasons discussed we have judged that additional investment in capacity is unnecessary at this time.

### 3.3.3 Timing

Please refer to the construction and connection schedule below. Please note that Grosvenor has designed the building it is developing at 889 Pacific Street to receive heating service from a district energy hot water system located outside the building. The construction and service connection schedule was reliant upon the TES Guidelines instruction that a CPCN is not required.

Schedule	Start	Complete
DPS construction and commissioning (100% complete)	July 2, 2020	October 14, 2020
ETS construction (50% complete)	Sept 1, 2020	February 2021
ETS Commissioning	March 2021	March, 2021
Construction Heat	March 2021	October 2021
Occupancy Heat	October 2021	n/a

### 3.3.4 Risks

An assessment of the risks related to the Extension are as follows.

*Construction* – Construction of the DPS began in July 2020 to mitigate a risk of trench wall collapse which would be higher if the trench remained open in the high rainfall fall season, and to meet the new customer’s target in-service date for heating. The trench for the buried pipe could not be backfilled until the DPS was commissioned, which required the trench to be shored and safe for personnel for the duration of the period. To manage any risk of degradation or collapse to the trench walls, Creative Energy decided to conduct this work during the summer months and to keep rainwater off the trench as much as possible given that water in soil tends to loosen fill material. Creative Energy holds daily coordination meetings with the customer’s construction team to increase the level of site activities coordination.

*Safety* - Creative Energy’s prime contractor had a safety program in place to manage the safety of workers in the trench. In addition, excavated pits were reviewed and certified by professionals every 10 days.

*Operations and Reliability* - The operations and reliability risk of the Extension is low. The Extension will be served by the existing Heating TES, which is already in operation. Creative Energy’s experience in operating thermal energy systems of this nature, along with the reliable technology being implemented will result in minimal to no risk in providing and maintaining

service to the Extension outside of normal practice. There will be no impact to the reliability of the South Downtown Heating TES with the extension of service to 889 Pacific Street.

*Load* - There is no material load risk associated with the Extension. The entirety of Extension load is comprised of the one building, which is being designed to receive service from the TES and for which a standard Customer Service Agreement will be in place with the customer. The customer of the Extension will ultimately be the Strata Corporation in control of the building Grosvenor is developing at 889 Pacific Street.

*Cost Recovery* – There is no risk of under-recovered costs and/or stranded assets. The Extension will have a beneficial rate impact to all customers of the TES and no customer contribution is required. A future rates application will ensure rates are set to support full cost recovery over the term of the CSA. The Extension will not impact rates or service for any other Creative Energy customers (Core Steam or NEFC). Such customers will not bear any risk as a result of the Extension, and potential cross-subsidization risk will be fully mitigated through existing BCUC-approved mechanisms.

### 3.4 Project Cost Estimate and Forecast Rate Impact

The following section provides an update to the review of the costs and forecast rate impact of the Extension in direct relation now to the Evidentiary Update to the Heating Rates Application for the TES, which is provided at Exhibit B-4 of the proceeding into Creative Energy’s Application for Heating and Cooling Rates at the Vancouver House Development.

Further to the process into review of the Extension established by Order G-267-20, this update underscores and reflects the following:

1. The costs reported in the attestation form were developed as a Class 3 estimate prior to construction of the Extension;
2. The updated capital and development cost of the Extension now reflects actual costs based on work completed to date and the additional forecast internal management and external regulatory costs based on the current process established under Order G-267-20;
3. The filing of the attestation form and reported incremental rate impact of the Extension pre-dated the development and filing of the evidence supporting the Evidentiary Update into the Heating Rates Application, which can now form the basis of comparison for estimating the incremental impact; and
4. The fixed charge billing determinants for the Extension are 941kW in accordance with the peak design capacity of the system as discussed in section 3.3.2.

The updated forecast capital and development costs of the system are provided in the following table.

Category	\$000s
Engineering	86
Equipment	65
Material	155
Construction	610
Financing	-
CPCN/Legal	30
Internal Management	111
Contingency (5%)	53
Total	1,110

The schedule of forecast costs and indicative rates with and without the Extension are reported in the following tables. A rates model for the Extension is provided at Attachment 3. The rates model for the 'No Extension' results is that attached to the referenced Exhibit B-4 above. The indicative forecast annual rate impact of the Extension beginning in the first full year of service (2022) would be a reduction in overall rates of approximately 9 percent.

<b>No Extension</b>				
	2020	2021	2022	2023
Maintenance	37,539	39,107	39,890	40,687
Operator Cost	25,506	26,010	26,530	27,061
Insurance	9,565	9,965	10,164	10,367
Municipal Access Fee	5,316	7,694	7,994	8,306
Financing Fees	6,101	6,145	5,929	5,713
Lease Payments	-	-	-	-
Regulatory Costs	20,005	-	-	-
Administration	67,132	68,458	69,827	71,224
Depreciation	116,202	125,296	125,296	125,296
Income Tax	44,921	53,457	57,009	60,408
Interest	89,658	92,176	88,934	85,692
Return on equity	136,646	141,301	136,242	131,183
<b>Total Fixed Costs</b>	<b>558,590</b>	<b>569,610</b>	<b>567,815</b>	<b>565,938</b>
<b>Total Fixed Charge Revenue Recovered</b>	<b>315,836</b>	<b>475,048</b>	<b>484,549</b>	<b>494,240</b>
<b>Capacity Billing Determinants</b>	<b>2,230</b>	<b>2,548</b>	<b>2,548</b>	<b>2,548</b>
<b>Fixed Charge Rate - \$/kW</b>	<b>\$141.63</b>	<b>\$186.44</b>	<b>\$190.17</b>	<b>\$193.97</b>

<b>With Extension</b>				
	2020	2021	2022	2023
Maintenance			51,669	52,702
Operator Cost			26,530	27,061
Insurance			13,165	13,429
Municipal Access Fee			10,100	10,494
Financing Fees			7,814	7,534
Lease Payments			-	-
Regulatory Costs			-	-
Administration			69,827	71,224
Depreciation			162,296	162,296
Income Tax			72,776	77,067
Interest			117,213	113,014
Return on equity			179,622	173,069
<b>Total Fixed Costs</b>			<b>711,013</b>	<b>707,889</b>
<b>Total Fixed Charge Revenue Recovered</b>			<b>604,257</b>	<b>616,342</b>
<b>Capacity Billing Determinants</b>			<b>3,489</b>	<b>3,489</b>
<b>Fixed Charge Rate - \$/kW</b>			<b>\$173.19</b>	<b>\$176.65</b>



#### 4 Other Applicable Matters in Section 2.4.2 of the TES Guidelines

The following table presents the concordance of evidence to the TES Guidelines at section 2.4.2.

TES Guidelines Section 2.4.2	Evidence or Explanatory Note
i. Evidence that the design energy capacity of the system has been appropriately determined and verified by a qualified person.	Please refer to the Design Review Memo at Attachment 2
ii. Anticipated construction build-out and TES operation schedule.	Please refer to section 3.3.3
iii. Load Analysis and Energy Demand Forecast for the Project:	As follows
a. description of methodology used to forecast peak load and energy demand including key inputs and assumptions;	Please refer to section 3.3.2 and Attachment 2
b. forecast of floor area by building archetype (e.g., high rise, mid-rise, row house, retail, etc.) including data sources and assumptions;	High-rise residential strata; 22,858 square meters of floor space
c. map of the TES Provider's service territory for the Project with identification of buildings connected;	Please refer to section 3.3.1
d. thermal energy end uses (e.g., space heat, domestic hot water, space cooling);	Space heat and domestic hot water
e. energy use intensities (EUIs) by thermal energy end use for peak load (W/m <sup>2</sup> ) and energy demand (kWh/m <sup>2</sup> ), including data sources and assumptions;	Please refer to Attachment 2
f. summary table of development schedule by year and building archetype or building including total sales (MWh) and peak (MW) for each year of the development schedule; and	Please refer to section 3 and Attachment 2
g. future expansion of the Project that is contemplated. Provide specifications concerning the size and location of the potential expansion.	Not applicable to the Extension and no further extensions to the TES are planned or contemplated at this time.
iv. The amounts and sources of any contributions (developer), grants and other funding.	Not applicable. The Extension has a forecast beneficial rate impact and no customer contribution is required.
v. Forecast and treatment of Capital Reserve Fund balances and impacts.	A capital reserve fund will not be maintained for the TES for the reasons discussed and addressed in the CPCN for the South Downtown TES and as approved

TES Guidelines Section 2.4.2	Evidence or Explanatory Note
	by Order C-1-19. The Extension raises no incremental impact nor concern in this matter.
vi. Annual operating budget specifying major cost components.	Please refer to section 3.4 above
vii. A description of emergency repair fund sourcing, size rational and access protocol.	A separate emergency repair fund will not be maintained for the TES for the reasons discussed and addressed in the CPCN for the South Downtown TES and as approved by Order C-1-19. The Extension raises no incremental impact nor concern in this matter.
viii. A description of sustaining/replacement capital fund sourcing, size rational and access protocol.	A sustaining/replacement capital fund will not be maintained for the TES for the reasons discussed and addressed in the CPCN for the South Downtown TES and as approved by Order C-1-19. The Extension raises no incremental impact nor concern in this matter.
ix. Any additional fees or liabilities of any kind.	Not applicable
x. Financial projection for various build-out scenarios to assess risk and required level of revenue requirements	Not applicable to the Extension

For further information, please contact the undersigned.

Yours sincerely,



Rob Gorter  
 Director, Regulatory Affairs and Customer Relations

Electronic attachments.